

WHAT IS CLAIMED IS:

1. A microscope comprising:
 - a light source including a control device configured to control an intensity of light emitted by the light source;
 - an illuminating optical system having a numerical aperture and being configured to illuminate a specimen;
 - an aperture device disposed in an illumination beam path and configured to modify the numerical aperture; and
 - a spectral correction device disposed in the illumination beam path and configured to correct a change in a spectral intensity distribution of the light emitted by the light source so that a spectral intensity distribution of light directed onto the specimen remains substantially unchanged;wherein upon a change of the numerical aperture by the aperture device, the light source is controllable by the control device of the light source so that a light flux through the illuminating optical system remains substantially unchanged.
2. The microscope as recited in claim 1 wherein the control device is configured to change the spectral intensity distribution of the light emitted by the light source.
3. The microscope as recited in claim 1 further comprising a light-sensitive detector disposed in the illumination beam path and configured to detect at least a portion of the light flux through the illuminating optical system and generate, as a function of the detected light flux, a signal that is usable for open-loop or closed-loop control of at least one the light source and/or of the spectral correction device.
4. The microscope as claim 1 wherein the aperture device includes an aperture having a changeable diameter.

5. The microscope as recited claim 4 wherein the diameter of the aperture is changeable using a motor.
6. The microscope as recited in claim 1 wherein the light source is powered electrically and wherein the control device is configured to modify electrical power delivered to the light source.
7. The microscope as recited in claim 1 wherein the spectral correction device includes a filter disposable in the illumination beam path, the filter having a plurality of working positions, a filter characteristic of the filter being a function of the respective working position.
8. The microscope as recited in claim 7 wherein the filter is an absorption filter, the absorption filter having a respective thickness as each working position, the filter characteristic being a spectral transmittance of the filter.
9. The microscope as recited in claim 7 wherein the filter is an interference filter, each working position corresponding to a respective position on a surface of the filter, the filter characteristic being a spectral interference.
10. The microscope as recited in claim 7 wherein the filter is a reflection filter, each working position corresponding to a respective position on a surface of the filter, the filter characteristic being a spectral reflection capability.
11. The microscope as recited in claim 7 wherein a spectral transmittance of the filter changes at least one of continuously and discontinuously.
12. The microscope as recited in claim 11 wherein the spectral transmittance of the filter changes in stepped fashion.

13. The microscope as recited in claim 7 wherein the spectral correction device is capable of changing a spectral intensity distribution of the light from the light source by a motion of the spectral correction device relative to the illumination beam path.

14. The microscope as recited in claim 13 further comprising a motor configured to move the spectral correction device.

15. The microscope as recited in claim 13 wherein the spectral correction device includes at least one of a linearly displaceable filter and a rotatable filter.

16. The microscope as recited in claim 13 wherein respective intensities of the light emitted by the light source and respective working positions of the filter are predeterminable and storable as a function of respective settings of the aperture device.

17. The microscope as recited in claim 1 wherein the spectral correction device is configured to influence the light intensity of at least one of a green and a red spectral region of the light from the light source.

18. The microscope as recited in claim 1 further comprising a control computer configured to control at least one of the aperture device, the control device, and the spectral correction device.

19. A method for modifying a light flux in a microscope including a light source having a control device, an illuminating optical system, and an aperture device disposed in an illumination beam path of the microscope, the method comprising:

changing a numerical aperture of the illuminating optical system using the aperture device;

controlling, upon the changing of the numerical aperture, the light source using the control device so that a light flux passing through the illuminating optical system remains substantially unchanged, the controlling causing a change in a spectral intensity distribution of light emitted by the light source; and

correcting the change in the spectral intensity distribution of the light emitted by the light source so that a spectral intensity distribution of light directed onto a specimen remains substantially unchanged.

20. The method as recited in claim 19 further comprising:

detecting at least a portion of the light flux passing through the illuminating optical system; and

generating a signal based on the detecting, the signal being usable for at least one of open-loop or closed-loop control of the light source and for the correcting the spectral intensity distribution of the light emitted by the light source.

21. The method as recited in claim 19 wherein the correcting is performed by moving a spectral correction device relative to the illumination beam path.

22. The method as recited in claim 21 wherein the moving of the spectral correction means is performed using a motor.

23. The method as recited in claim 21 wherein the moving of the spectral correction device is performed by at least one of displacing a first filter and rotating a second filter, the second filter including a circular disk.

24. The method as recited in claim 19 wherein the correcting is performed by moving a spectral correction device relative to the illumination beam path and further comprising:

providing, as a function of respective settings of the aperture device,
respective values of the intensity of the light emitting by the light source and
respective working positions of the spectral correction device, and
storing the provided values and working positions in a data storage unit.

25. The method as in claim 19 further comprising controlling at least one of
the aperture device and the control device using a control computer.

26. The method as recited in claim 19 wherein the correcting is performed by
moving a spectral correction device relative to the illumination beam path and
further comprising controlling the spectral correction device using a control
computer.

27. The method as recited in claim 19 wherein the correcting is performed by
moving a spectral correction device relative to the illumination beam path so as to
change the spectral intensity distribution of the light from the light source.